Test Procedure for Mating Fiber Distributed Data Interface (FDDI) Duplex Connectors to FDDI Active Fiber-Optic Modules

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ABSTRACT: This document describes the method for testing the active device mounts (ADMs) and receptacles of fiber-optic active modules with FDDI duplex connectors for wear out and coupled signal attenuation.

APPLICABILITY: This test procedure is required for Digital personnel or external suppliers responsible for the evaluation and qualification of fiber-optic active modules.

STATUS: APPROVED 23-May-1990; use VTX SMC for current status.

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APPROVAL: This document has been reviewed and approved by T&NM.

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1 OBJECTIVE

This procedure describes the method for testing the active device mounts (ADMs) and receptacles of fiber-optic active modules with FDDI duplex connectors for wear out and coupled signal attenuation.

2 TEST APPARATUS

Test apparatus includes:

- Three dual channel cable assemblies for each ferrule material listed below (a total of six cables). The connector shall conform to Digital specification A-PS-1230661-0-0. The cable assembly shall be 4.5 meters long, per Digital specification A-PS-1702408-0-0.

  Ferrule materials:

  Ceramic Alumina
  Ceramic Zirconia

  NOTE

  Refer to Digital's Qualified Vendor List for approved suppliers and styles.

- Three fiber-optic modules for each ferrule material to be tested (a total of six modules).
- Measurement equipment capable of measuring *average* coupled launch power for transmitter modules and light sources, sensitivity for receiver modules, or responsivity for photodetectors.

3 TEST SETUP

The test cable assembly will not be mode stripped. It must lay flat and unwound.

This is a relative measurement test having as a reference the initial reading (*average* coupled launch power, sensitivity, or responsivity, depending on the module being tested) for *each* test as shown in the test matrix under heading 4.

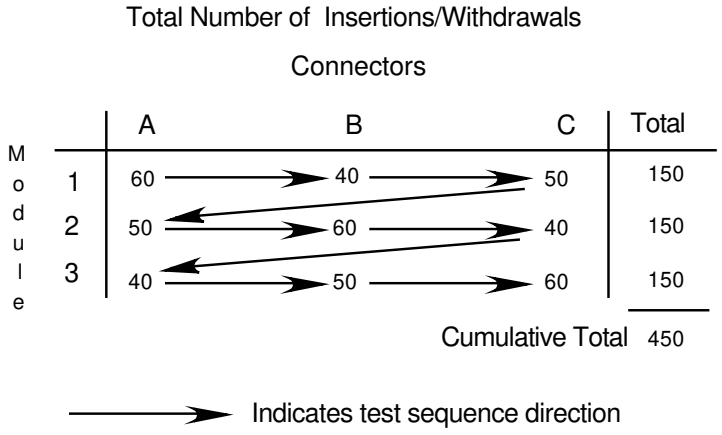
The modules being tested shall be securely mounted and shall not move during insertion and withdrawal test cycles.

Three connectors of the same ferrule material shall be tested with three modules. Test requirements are as follows.

- Only one connector per duplex cable assembly shall mate with the modules.
- The 2.5 mm bayonet connectors in the duplex cable assembly will be used to connect with the measurement equipment.
- Each module will undergo a total of 150 insertion/withdrawal cycles.
- This test sequence/setup shall be repeated for every different connector ferrule material tested.
- Tests are to be performed at room temperature.

4 TEST MATRIX FOR EACH FERRULE MATERIAL

The following matrix summarizes the test sequence required for this test procedure. This matrix has been set up to simulate various levels of intermateability between all connectors and all modules tested (that is, new module with new connector, new module with used connector, used module with new connector, and used module with used connector).



5 TEST PROCEDURE

The connector/module mating test procedure is as follows.

1. Ensure that all modules and connectors are clean before starting the test.
2. Label modules 1, 2, and 3, and label duplex connectors A, B, and C.
3. Connect module 1 with connector A and record initial reading. Maximum insertion force shall be 6.0 pounds.
4. Complete 10 insertion/withdrawal cycles between module 1 and connector A and record a reading after the tenth cycle. DO NOT CLEAN THE MODULE OR THE CONNECTOR.
5. Repeat step 4 recording a reading after every tenth cycle until completing 60 total cycles.

6. Stop testing on any given combination once a differential reading larger than 0.7 dB is obtained. If cleaning brings back the readings within 0.7 dB from the initial reading, continue testing combination(s) and note that cleaning was performed.
7. After taking the last cycle reading, disconnect connector A, clean connector ferrule with alcohol and a cotton swab (talcum free), reconnect connector A, and record a reading.
8. Disconnect connector A.
9. Connect module 1 with connector B and repeat steps 3 through 8 until completing 40 total cycles.
10. Repeat step 9 with module 1/connector C, module 2/connector A, module 2/connector B, and so forth, up to module 3/connector C, completing the total number of cycles indicated in the test matrix for each module/connector combination.
11. Repeat steps 1 through 10 for a new set of connector ferrule material and modules.

6 FAILURE CRITERIA

The module is considered to fail the test when, after cleaning the connector ferrule, the reading cannot be brought back within 0.7 dB from the initial reading or if the connector requires cleaning more than once in less than 10 consecutive insertions/withdrawals.

Connector ferrule jamming, breakage, or damage to the module housing also constitutes a failure. Binding does not constitute a failure.

The maximum allowed differential reading is 0.7 dB.

The maximum insertion/withdrawal force shall not exceed 6.0 pounds.

APPENDIX A RELATED DOCUMENTS

The following documents, per latest revision, are related to EL-MF716-00.

- A-PS-1230661-0-0, *Connector, Fiber Optic, Duplex, 62.5/125 um, Sealed Unit*
- A-PS-1702408-0-0, *Cable Assembly, Fiber Optic, FDDI To Dual 2.5 mm Bayonet Connectors*